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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/568,059	02/13/2006	Tohru Nakagawa	10873.1846USWO	3715
53148 7590 03/20/2009 HAMRE, SCHUMANN, MUELLER & LARSON P.C. P.O. BOX 2902-0902 MINNEAPOLIS, MN 55402				
EXAMINER				
LE'GESSE, HENOK D				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/568,059

**Applicant(s)**

NAKAGAWA ET AL.

**Examiner**

HENOK LEGESSE

**Art Unit**

2861

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 December 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 2,3,6,7,9,10,13 and 14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,4,8 and 11 is/are rejected.
- 7) ☒ Claim(s) 5 and 12 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/08)  
Paper No(s)/Mail Date 02/13/2008.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☒ Other: One Reference (JP 406143669)

**DETAILED ACTION**

***Election/Restrictions***

1. Applicant's election of Embodiment 3, Figs.4-7, (Claims 1, 4, 5, 8, 11, 12) in the reply filed on 12/23/2008 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)). Thus, claims 2,3,6,7,9,10,13, and 14 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected inventions, there being no allowable generic or linking claim.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Banno et al. (US 6,060,113).

**Banno et al. teaches:**

**Regarding claim 1**, a liquid drop placing apparatus (figs.16, 18C, 20B);

an ink jet head (7 in fig.16, 301 in figs.18C and 20B);

a substrate (1) receiving a liquid drop (4) discharged from the ink jet head (7,301);

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a device (9 in fig.16, 3021 in figs.18C and 20B) for irradiating or reflecting light from a nozzle hole or its vicinity of the ink jet head (7,301) toward the substrate (1);

a position moving device (col.25 lines 39-57) for controlling a relative position between the ink jet head (7,301) and the substrate (1); and

a control device(12, fig.16) for discharging a liquid from the inkjet head (7); wherein a light-receiving element (8 in fig.16, 3022 in figs.18C and 20B) for recognizing a position of the ink jet head (7,301) is disposed behind the substrate (1), when seen from the ink jet head,

the substrate (1) has a transparency at least to a degree that the irradiated light or the light reflected from the nozzle hole or its vicinity toward the substrate enters the light-receiving element (8,3022) (see figs. 16,18C,20B), and

the light-receiving element (8 in fig.16, 3022 in figs.18C and 20B) senses the irradiated light or the light reflected from the nozzle hole or its vicinity toward the substrate (1) (see figs. 16,18C,20B).

**Regarding claim 8**, a liquid drop placing method (figs.16, 18C, 20B) in which a liquid (4) is discharged from an ink jet head (7 in fig.16, 301 in figs.18C and 20B) and placed to a surface of a substrate (1), the method comprising:

disposing a light-receiving element (8 in fig.16, 3022 in figs.18C and 20B) on a liquid discharge side of the ink jet head (7,301);

disposing the substrate (1) between the ink jet head (7,301) and the light-receiving element;

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determining a position of the ink jet head (7,301) with the light-receiving element (8,3022) before discharging the liquid (4) (see fig. 15);

setting a relative position between the ink jet head (7,301) and the substrate (1) based on the determined information, and placing the liquid (4) to the substrate (1) (see fig. 15).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary.

Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 4 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Banno et al. (US 6,060,113) in view of Hamazaki (JP 406143669).

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**Banno et al. teaches:**

**Regarding claim 4**, the liquid drop placing apparatus (figs.16, 18C, 20B) including the ink jet head (7,301), light irradiating element (9 in fig.16, 3021) and the substrate (1).

**Regarding claim 11**, liquid drop placing method (figs.15, 16, 18C, 20B) that comprises ink jet head (7,301), light irradiating element (9 in fig.16, 3021) and the substrate (1).

**Banno et al. does not teach:**

**Regarding claim 4**, the irradiating light comes from an inside of the nozzle hole.

**Regarding claim 11**, the irradiating light comes from an inside of the nozzle hole.

**Hamazaki teaches:**

**Regarding claim 4**, a marking device that includes nozzle where the irradiating light comes from an inside of the nozzle hole (figs.1, 2).

**Regarding claim 11**, a marking device that includes nozzle where the irradiating light comes from an inside of the nozzle hole (figs.1, 2).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of Banno et al such that the irradiating light comes from an inside of the nozzle hole based on the teachings of Hamazaki. The motivation being to provide a printhead that is more compact thereby improving the resolution of the printhead.

***Allowable Subject Matter***

7. Claims 5 and 12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Pertinent Prior Arts***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Taneya et al. (US 2001/0043246) teaches liquid drop placing apparatus having inkjet head and ink jet head position locating system (figs.1,2,6,7,18); Soar et al. (US 2005/0074247) teaches liquid drop placing apparatus having a light-receiving element disposed behind the substrate when seen from the ink jet head (fig.12).

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HENOK LEGESSE whose telephone number is (571)270-1615. The examiner can normally be reached on Mon.- Fri. Between. 8:00 AM-6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MATTHEW LUU can be reached on (571)272-7663. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

H.L.  
03/13/2009

/K. Feggins/  
Primary Examiner, Art Unit 2861